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Wireless Powered Lab-on-Disc Platform for Measurements on the Spin

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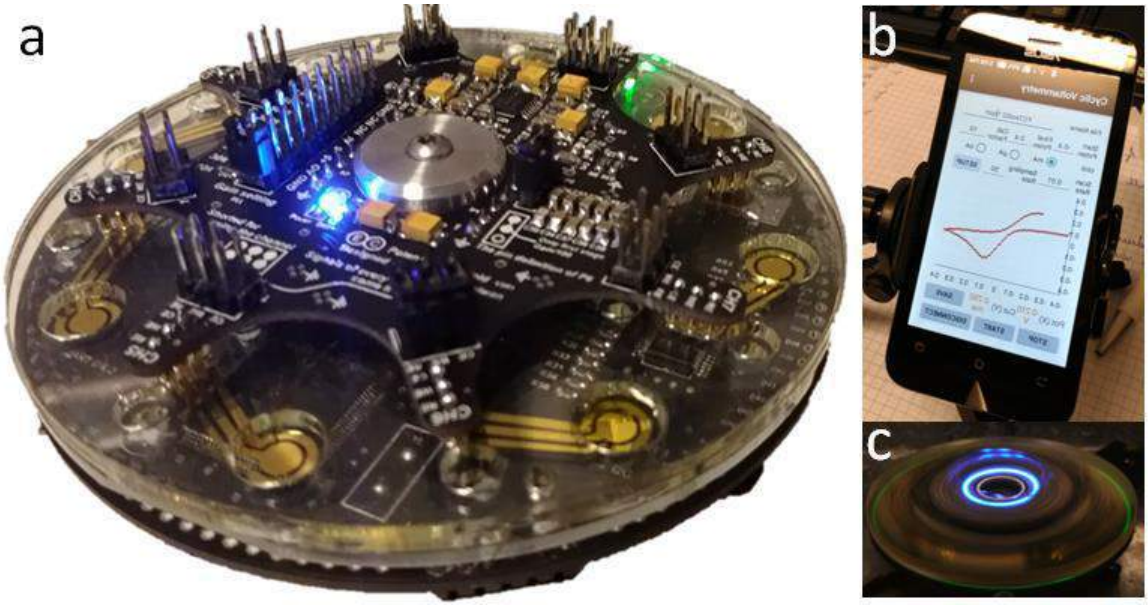
We integrate Qi wireless power, Arduino microcontroller, Bluetooth signal transmission and lab-on-disc technique for developing a sample-to-answer biosensing platform (Fig. a). The wireless powered lab-on-disc platform (PLoD) connects to an Android smartphone for real-time digital to analog converter (DAC) and analog to digital converter (ADC) control. Furthermore, the PLoD is capable of measuring data while spinning, as shown in Fig. b and c.



The first application of the PLoD is a potentiostat for electrochemical based biosensing [1], we have successfully measure Ferri Ferrocyanides Current-Potentio curve while spinning from 0 to 3000 rpm. There are various lab-on-disc applications[2] can be carry out by the PLoD platforem for the future stand-along diagnostics and healthcare systems.

Reference

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[2] P. Kassal, J. Kim, R. Kumar, W. R. de Araujo, I. M. Steinberg, M. D. Steinberg, and J. Wang, “Smart bandage with wireless connectivity for uric acid biosensing as an indicator of wound status”, Electrochemistry Communications, vol. 56 (2015), pp. 6 - 10.